RESPONSE TO RESTRICTION REQUIREMENT

AND REMARKS

Claims 1-58 are pending in the above-identified application and are subject to an election requirement under 35 USC 121 and 372. In the above regard, Applicant notes that this application was made the subject of a previous election/restriction requirement that was previously answered with traverse. That previous traversal was on the grounds that the amendments to the claims filed with that response added additional technical features to all of the claims which had not been considered by the Examiner. The Examiner now finds that traversal not to be persuasive because the restriction requirement has been changed in the present Official Action so as to take the new limitations into account. The Examiner in the remainder of the currently outstanding Official Action has correctly anticipated that Applicant will elect the newly defined Group A invention for further prosecution in this application.

The claims of this application are reproduced hereinabove showing the changes sought to be made and in association with respectively appropriate status identifiers as required by the Rules.

More specifically, in the currently outstanding non-final Official Action, the Examiner has:

1. Identified the following inventions that he alleges to be patentably distinct from one another, and required Applicants to elect a single invention to which the claims must be restricted. In this regard, the Examiner has asserted that the following groups do not represent a single inventive concept under PCT Rule 13.1 because under PCT Rule 13.2 they lack a common special technical feature. Hence, the inventions among which Applicants have been required to elect in the currently outstanding Official Action are as follows:

Group A, claim(s) 1-11 and 41-50, drawn to a method of forming an active matrix organic EL display element by depositing an organic EL material via an electrostatic attraction type inkjet and the display element thus produced.

Group B, claim(s) 12, 13, 39, and 40 drawn to an apparatus of an electrostatic attraction type inkjet.

Group C, claims 14, 15, 16-26, 51 and 52, drawn to a method of forming a liquid crystal array by ejecting droplets of a spacer material less than 1 pl in size by the inkjet method and the liquid crystal display thus produced.

Group D, claims 27-31 and 53, drawn to a method of forming a liquid crystal array by hitting a spacer material that has previously been deposited with a droplet from an electrostatic attraction-type inkjet device, so the spacer moves and the liquid crystal array thus produced.

Group E, claims 32-38 and 54-58, drawn to a method of ejecting drops of color filter layer liquid by an inkjet method and the color filter layer thus produced.

2. Required the Applicant to elect one of the foregoing inventions under 35 USC 121 and 372 for further prosecution on the merits.

3. Required Applicant to list all of the pending claims that are deemed to be readable on the elected invention;

4. Objected to Claim 7 on the basis that it fails to further limit Claim 6 from which it depends – **In response to this objection, the Applicant has elected to cancel Claims 7 and 47 (that depends from Claim7), without prejudice so as to overcome the Examiner's objection**

5. Rejected Claims 1-11 and 41-50 under 35 USC 102(b) as being anticipated by Shimoda et al (JP 10-012377) cited in one of Applicant's Information Disclosure Statements.

6. Rejected Claims 1-11 and 41-50 under 35 USC 103(a) as being unpatentable over Shimoda et al in view of Higashino et al (US Patent No. 6,322198) in view of Chang et al (US Patent Application Publication No. 2002/0118251) further in view of Hawkins et al (US Patent Application Publication No. 2002/0130931)

7. Indicated that joint inventorship is assumed unless he inform us otherwise – Applicants respectfully confirm that the subject matter of all of the claims of this application was commonly owned at the time that it was made.

8. Asserts that Claims 5 and 10 duplicate one another such that one or the other should be canceled as an improper attempt to double patent the same thing (or otherwise stated, one of the claims 5 and 10 is not a proper dependent claim as further limiting the content of the claim that it depends upon – In response to this objection, Applicants have amended Claim 10 to be dependent upon Claim 6 rather than Claim 1 thereby overcoming the Examiner's objection.

9. Not as yet acknowledged the Information Disclosure Statement filed concurrently with this application or the Information Disclosure Statement of 22 June 2005. – Acknowledgement of the last identified Information Disclosure Statements filed in this application is respectfully requested in response to this submission,

10. Acknowledged our claim for foreign priority under 35 USC §119 (a)-(d) or (f) and confirmed the receipt by the United States Patent and Trademark Office of the required copies of the priority documents.

11. Not as yet acknowledged or accepted the formal drawings filed concurrently with this application on 24 May 2005 - Acknowledgement and acceptance of the drawings of this application in response to this submission is respectfully requested.

In response to items 1-3 above, the currently outstanding requirement for restriction, **Applicant hereby elects the invention of Group A, Claims 1-11 and 41-50, *without traverse*** for further prosecution on the merits in this application.

Further, in response to the Examiner's other substantive rejections as summarized in items 5 and 6 above Applicants hereby present the following comments indicative of the patentable nature of the claims of this application as hereinabove amended. (The remaining items are either already adequately and correctly handled in this case or are the subject of a request for further appropriate action by the Examiner in response to this submission.)

Accordingly, Applicant respectfully submits that it will be understood by the Examiner that in the method for manufacturing an organic EL display element, with the inkjet method, it is possible to form layers for three primary colors R, G, and B simultaneously. This prevents the organic EL element from being damaged by the repeating photolithography process, and allows reduction of a production time.

Further, since the ink is only applied to a position of the color pixel, an amount of the pigment used becomes less than the amount used in the photolithography method. Thus, it is possible to realize a remarkable reduction of the material cost. Further, since it is not necessary to carry out the complicated exposure and development, a developing apparatus becomes no longer necessary. Therefore, the manufacturing cost is reduced. Moreover, since it is possible to work under a normal temperature and a normal pressure, the inkjet method appears to be more promising in improving a productivity, and in simplifying the productive facility" (see page 5, line 18-page 6, line 9 of the English specification).

However, "in the conventional inkjet method, there has not been carried out a sufficient study on how to dry the droplets ejected from a nozzle. Thus, it is known that droplets do not immediately dry after landing on a substrate. This results in a greater amount of non-dried droplets on the substrate in order to obtain a desirable layer thickness of the organic EL layer. As a result, it takes long time for drying the droplets, thereby allowing the droplets to move on the substrate before the droplets dry. This deteriorates a formation accuracy of the organic EL layer" (see page 6, lines 13-22 of the English specification).

"Reduction of the diameter of the single droplet is an option to avoid the foregoing problem" (see page 8, lines :13 and 14 of the English specification).

In this case, "the droplet 314 needs to be ejected toward the same pixel twice or more. However, after a first droplet, successive droplets land on the organic EL layer formed by a previously landed droplet. Since the organic EL layer formed by the previously landed droplet is not subjected to the liquid-affinity treatment, the successive droplets do not spread out in a desirable shape. This causes an unevenness. Further, if the successive droplets land before the previous droplet dries, the ink will spread out to the liquid-affinitive region 312 of the next pixel. Therefore, ejection of the successive droplets must be suspended until the previous droplet 314 dries.

This results in a poor productivity, Further, it is necessary to carry out the photolithography process for forming the liquid-affinitive region and the liquid-repellent region. This does not allow the inkjet apparatus to contribute to simplification of the productive facility advantageously" (see page 8, line 24-page 9, line 16 of the English specification).

Further, also in formation of black matrices (BM) in an organic EL display, "one option is to increase concentration of the droplet 314, and eject the droplets 314 at sufficiently long intervals, so that the solvent of the previous droplets is dried off by the time a final droplet is landed. However, the higher the concentration of the droplet becomes, the higher viscosity the ink has so as to be unable to be ejected by using a conventional inkjet method. Further, it is necessary to carry out the photolithography process for forming the BM. Therefore, the inkjet apparatus is not allowed to contribute to simplification of the productive facility advantageously" (see page 11, line 24-page 12, line 9 of the English specification).

In order to solve the foregoing problem, the inventors of the present application have diligently studied formation of an organic EL layer based on an inkjet method that allows easy production with simple equipment and low costs, in a method for manufacturing an active matrix organic EL display element using an electrostatic attraction type inkjet apparatus.

An object of the study is to prevent deterioration of a formation accuracy of the organic EL layer when forming one organic EL layer with a desired thickness by ejecting droplets and laminating the droplets.

As a result of the study, the inventors have found that deterioration of a formation accuracy of the organic EL layer when forming one organic EL layer with a desired thickness by ejecting droplets and laminating the droplets can be prevented by arranging such that the droplets are dried immediately after landed on an organic EL layer formation region on a substrate, preventing movement of the droplets landed on another droplet having previously landed. Further, the inventors have found that in order to dry the droplets immediately after landed on the organic EL layer formation region on the substrate, it is requested that each of the droplets ejected via the nozzle of the inkjet apparatus is 1 pl or less.

As described above, when each of the droplets ejected via, the nozzle of the electrostatic attraction type inkjet apparatus is 1pl or less, it is possible to attain a high speed of drying the droplets, high accuracy in landing the droplets, easiness in ejecting the droplets, and large number of landed droplets (high productivity). This is evident from Table 3 on page 75 of the English specification.

However, none of the cited references disclose the object of the present application of arranging such that the droplets are immediately dried after landed on the organic EL layer formation region on the substrate in order to prevent deterioration of a formation accuracy of the organic EL layer when forming one organic EL layer by ejecting droplets successively. Further, none of the cited references disclose arranging such. that each of the droplets ejected via the nozzle of the inkjet apparatus is 1pl or less in order to attain the object.

Specifically, Shimoda only discloses use of an inkjet apparatus in order to deposit an organic light emitting layer. Higashino only discloses changing a voltage applied on an electrode in an electrostatic attraction type inkjet head so as to control the size of droplets of ink or the volume of the ink that is ejected from the inkjet head.

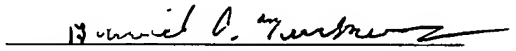
Chang only discloses reducing the volume of droplets ejected from an inkjet apparatus in order to increase resolution of an image to be formed. Needless to say, Chang does not disclose successively ejecting droplets from a nozzle so as to repeat ejection of the droplets onto the same organic EL layer formation region. Hawkins only discloses that in an inkjet apparatus, the size of a nozzle is a result effective variable for determining the flow of ink through the nozzle and thus the droplet size.

As described above, the cited references disclose neither the object to be solved by the present invention nor the feature of the present invention that each of the droplets ejected from the nozzle of the inkjet apparatus is 1pl or less. Therefore, the subject matter of the present invention cannot be obtained by any combination of the cited references, and cannot be easily arrived at by any combination of the cited references.

Still further, Applicants believe that additional fees beyond those submitted herewith are not required in connection with the consideration of this response to the currently outstanding Official Action. However, if for any reason a fee is required, a fee paid is inadequate or credit is owed for any excess fee paid, you are hereby authorized and requested to charge and/or credit Deposit Account No. **04-1105**, as necessary, for the correct payment of all fees which may be due in connection with the filing and consideration of this communication.

Respectfully submitted,

Date: April 21, 2009



SIGNATURE OF PRACTITIONER

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